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- Q2 To know whether a particular enrichment object or feature in the environment is valuable to the animal we can use different ways of testing our parameters, one of them being behavioural observations. We can see how much the animals engage in a particular activity, how much they explore and how much time they spent doing that alone or together. Especially in a small environment like a laboratory cage it is important that we make sure that the activities and objects that we provide are indeed valuable to the animal.
- Q3 The enrichment activities and features that Andrew Newman and myself have trialled are part of a more informal approach. We were looking and wondering what would be valuable to the animals and how can we increase the surface space, the functional space for animals to use in these laboratory cages. So we just started thinking about the different goals of what we would like animals to do, for example, engage in their environment, explore, solve problems, being able to navigate and climb and swing or socially be together or apart. So environmental enrichment has goals that we were trying to achieve, and so when we started trialling them we would design ideas around those particular goals. None of them have been formally tested but that is something that we hope to do in the future.
- Q4 When you are thinking about designing environmental enrichment and goal oriented enrichment you are of course never completely sure that what you think will be enriching to animals is indeed also enriching to the animals, and therefore it's always important to behavioural observations and research. What we think is enriching might not be enriching to them, so sometimes it can be surprising to find that there are difference between what we think and what they experience. We know mice are curious and like to explore their environment, they are interactive animals. So it was not surprising that when we provided different type of objects and features in the environment, the animals readily took to them. We did see some preference for certain devices and certain activities but in general the animals were very happy to see all these activities and opportunities in their environment and they readily engage with them. Especially of animals are housed in cages where there is generally there is not a lot to do or to choose from, so complexity is fairly low, it is not that surprising that animals actually take the opportunity to engage if we increase complexity, choice and control for the animals by providing interesting and valuable enrichment activities for them.
- Q5 There are of course a lot of practical considerations to think about when you are designing enrichment for animals. First it has to of course be safe for animals and for caretakers. We have to be able to monitor the animals' health and well-being on a regular basis, like daily but we also have to think about how easy it is to implement enrichment, to clean the **outer** **clave** and to even stack. So for us it was important to think about goal oriented enrichment as well as thinking about how can we make sure environmental enrichment is done on a regular basis and it's not something that can only when there is extra time. So the practical considerations to make environment enrichment successful where based on animal needs but also on the realistic time frames and opportunities for animal care staff.
-]1:05 What is also important of course is that if these ideas are going to be explored in the future by others which we hope, that they will be tested and then if these ideas can actually be

used, they could be produced on a larger scale which of course would also reduce the cost of environmental enrichment and make it more accessible for more laboratories but also for schools that use mice to allow for environmental enrichment to be implemented on a daily basis or at least on a regular basis.

- Q6 Andrew Newman and I met at a congress of the Institute of Animal Technology in the UK many years ago. Over the years we have discussed environmental enrichment in animal welfare programs and our idea started to center around the fact that we think it's important to increase the functional space for animals in small laboratory cages, allowing animals to have lots of different opportunities and complexity to engage in species specific behaviours and things that animals really enjoy, focusing on positive animal welfare. This is how we got involve together in research which as I mentioned earlier is more of an informal pilot study but we hope of course that these ideas will be taken further and explored in the future.
- Q7.1 These ideas that we developed have been part of more of a informal pilot study to just explore the ideas and think about what are the opportunities that we could potentially provide for the animals, but of course we hope that ideas like these and of course many other ideas that others could come up with is something that will be further explored in the future and especially also tested through formal research projects. It is important to make evidence based decisions especially also when it comes to smaller cages and the use of space making sure that indeed the environmental enrichment activities and objects that we provide are indeed enriching to the animals and valuable to the animals. We hope these ideas will be further explored potentially with different strains of mice but even other animals like rats or other species that live in smaller spaces that could benefit from an increase of surface space and functional surface space.
- Q7.2 There are of course several practical considerations to be considered with regard to cleaning and safety for both animals and staff, but there are opportunities for potentially developing or working with new materials and objects depending on what the enrichment goals are.
- Q8 The ultimate aim of our work was of course to think about and improve animal welfare and especially mice welfare in this case. So we want to think about what are the opportunities that we have and what can be done to increase surface space and provide for animals to engage in complex environments to have more choices in control and to focus on positive welfare.